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SOME ARCHAEOLOGICAL WORK IN PORTO RICO¹

By HERMAN K. HAEBERLIN

JUEGO DE BOLA

IN June 1915 the author excavated a so-called *juego de bola* or ball-court situated in the limestone mountains of the interior of Porto Rico several miles northwest of the town of Utuado. More precisely this site is located in the district called *Barrio Rio Arriba de Arecibo*, about a quarter of a mile north of the point where the municipal road which runs from the schoolhouse of this *barrio* to the *Barrio Santa Rosa* crosses the *Quebrada de los Medinas*, a little brook which flows into the *Rio Grande de Arecibo* from the west. The land in which the site is located, is owned by Señor Blas Gau, whose house stands several hundred feet south of the *juego*.

The site was one of those inclosures popularly known by the natives as ball-courts (*juego de bola*) because they believe that they were used by the Indians for playing ball.² About the location of these ball-courts Fewkes says the following:

The ball courts examined by the present author were situated for the most part on terraces or on land fringing rivers, elevated high enough to be above freshets, and yet lying in river valleys that could be cultivated.³

¹ The excavations reported in this paper were executed for the Natural History Survey of Porto Rico which is being conducted jointly by the New York Academy of Sciences and by the Government of Porto Rico. The anthropological division of this survey is in charge of Dr. Franz Boas under whose directions the fieldwork of this paper was performed. The specimens found are in the American Museum of Natural History.

I would like to express our indebtedness to Dr. Charles P. Berkey, of Columbia University, and to Mr. Gratacap, of the American Museum of Natural History, for furnishing the mineralogical and geological information published in this paper. Dr. Berkey and his assistants also analyzed the soil specimens and supplied the data concerning the texture of the pottery.

² See Fewkes, "The Aborigines of Porto Rico and Neighboring Islands," *Twenty-fifth Annual Report Bureau of American Ethnology*, p. 79.

³ Fewkes, *op. cit.*, p. 82.

The location of the *juego de bola* excavated corresponds to this statement. It was situated at the bottom of a small valley which runs from north to south and through which the *Quebrada de los Medinas* flows. The level bottom of this valley was under cultivation. The inclosure was some fifty feet or more east of the brook, at the foot of the mountain which incloses the valley on the east.

Before excavation the only visible signs of an archaeological site consisted of two parallel rows of stones projecting out of the soil and partly overgrown by dense vegetation. These stones were irregular in size and shape but all were more or less long and flat. These stood on end and projected vertically out of the soil as seen in the photograph which was taken before work was begun (fig. 9).



FIG. 9.

On the eastern third of the *juego* coffee trees were growing. On the remaining two-thirds beans, maize, and tobacco had been planted at different times.

As is shown schematically in the drawing (fig. 10) the *juego* was rectangular and bordered by two parallel rows of upright stones running from east to west. The row on the south was continuous, all the stones obviously standing in their original positions. In the northern row, however, there were considerable breaks near the middle of the line. In the western half of the inclosure a row of

stones lying horizontally on the surface soil and with the flat side down crossed the *juego* in the way indicated in the drawing, thus forming a pavement. The horizontal position of these stones on the present surface of the soil and thus contrasting with the position

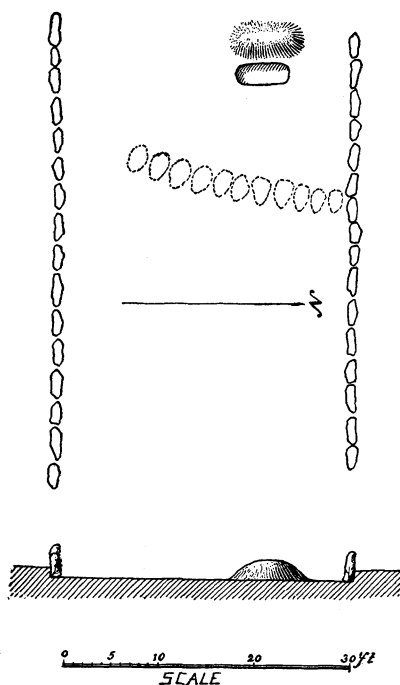


FIG. 10.

of the other stones which stood vertically and were imbedded in the present surface, left no doubt that this row of stones was not in its original place. This was corroborated by the natives who remembered that these stones had been removed by them from the northern row of vertical stones in order to make a rude pavement over the wet and swampy soil of the valley. In the course of the excavation the stones of this pavement were replaced into the gaps mentioned above in the northern row of stones. The way in which they fitted into these gaps proved that the statement of the natives was correct.

The two parallel rows of stones ran exactly from east to west. The rectangle they formed was open at the two shorter sides, that is to say on the east and on the west. There were no traces whatever of stones having stood at these two sides. The distance between the two parallel rows of stones varied from twenty-nine and a half to thirty-one feet. The northern row of stones was forty-four feet long, the southern one fifty feet, three inches.

The rows of stones were approximately straight. The deviations from the straight line were, I think, caused in the course of time by the dampness of the ground and the effect of cultivation. Almost all of the stones were more or less flat, but otherwise quite irregular in size and shape. They varied in length from twelve to

thirty-nine inches. The largest slab was the last one in the southwestern corner. None of the stones showed any traces of workmanship whatsoever. If they ever existed, they have been eroded. The two rows of stones were continuous, the stones being set closely together. Most of the slabs were still standing upright. There can be no doubt that this was the original position of all of them. It is not surprising that some had fallen over in the course of time in the damp soil.

A trench dug lengthwise through the *juego* showed that two layers could be easily distinguished. A dark surface layer lay over one of yellow clay. The upper layer was carefully removed. All finds were deposited between these two layers. This proves that the surface of the lower layer was the original surface of the *juego*.

Excavation showed that the yellow layer was five to six inches deeper inside of the two rows of stones than outside of them. The profile of the *juego* after the dark upper layer had been removed is shown in the lower drawing of figure 10. The stones, as seen in this picture, were not buried in the original surface, that is to say in the lower layer, but were held in place by simply resting against the higher soil outside of the *juego*. The two rows of stones formed a low continuous wall on the northern and southern sides of the *juego*.

Within the *juego* the surface of the yellow layer, the original floor, was quite horizontal and level, with one exception however. After the removal of the dark surface layer the yellow layer proved to form a mound near the northwest corner of the *juego* (see fig. 10). This mound was one foot high, eight and one-half feet long from north to south and four feet wide from east to west. Directly east of this mound was a hole one foot deep, but of much smaller circumference. There were no deposits within the mound or near it that could give a clue as to its significance.

As we are quite in the dark as to the meaning of these Porto Rican sites, popularly called *juegos de bola*, we were careful to look for any signs of decoloration, which might have been interpreted as house-posts or the like. It is, however, possible to state defi-

nitely that there were no such decolorations either within the *juego* or at the base of the stones.

As already stated all the deposits found in the *juego* lay on the surface of the yellow layer. They consisted chiefly of potsherds. These were found in large numbers scattered over the site. Some were ornamented. The largest pieces lay near the base of the stones. This was very likely due to the protection the deposits found there.

All the potsherds found here belonged to one and the same type of dark red pottery. Figure 11 shows a number of samples. No traces of paint could be found on this pottery. The style of

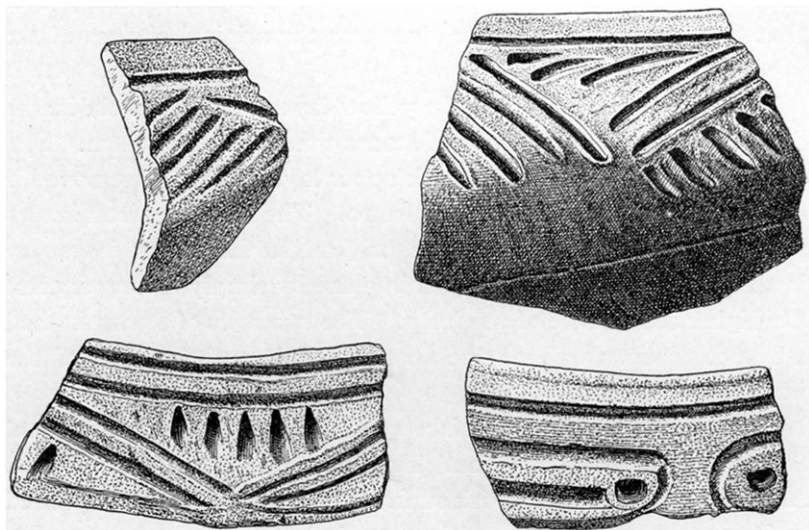


FIG. 11.—Potsherds. (25.0-1536.)

ornamentation on this pottery was uniform. The technique was incised work. The ornaments consisted either of scroll-work or of combinations of straight lines of which figure 11 shows several typical examples. The scroll-work of these sherds is of the same type as that on the pot of figure 28. This pot was found in a cave near the *juego*. It was deposited under guano and is one of the few intact pots from Porto Rico.

Besides the potsherds a number of green stones and a small

piece of quartz (25.0-1549) were found in the *juego*, all of them between the two layers. One greenish-gray stone is about 12 cm. long and is a diorite porphyry. One edge may possibly show some flaking. None of the other stones show traces of workmanship. They are disintegrated and reconsolidated tuffs. One light green stone is according to Mr. Gratacap consolidated, re-deposited volcanic sand. The fact that these stones were all found on the original surface of the *juego* makes it seem plausible that these stones may be rejects. Attention is called to the fact that the celts mentioned below (figs. 23 and 24) are also made of tuffs.

Near the *juego*, but not in it, the celt of figure 12 was found. It is made of coral. Its surface is rough and shows no polishing.



FIG. 12.—Celt. Actual length 8.5 cm.
(25.0-1557.)

Near the center of the *juego* a spherical stone was discovered. It is about 9 cm. in diameter and does not appear to be an artifact. Apparently it is one of the stones of which Fewkes says:

The discovery of stone balls in these inclosures is often mentioned as an indication that these places were used in ball games, implying that the stones were the balls used. . . . Indeed, some of the larger stone balls, which are more than 2 feet in diameter, could hardly be carried by a single man. Moreover, many of the balls are not spherical, but are simply waterworn boulders having the form of oblate or prolate spheroids. Considering these facts I have serious doubt whether the stones could have been used in the kind of ball game described by Oviedo. . . .¹

Obviously these doubts are well warranted. I do not venture to suggest what these stones may have been used for. A black stone ball (25.0-1552) was brought to me by some peasants who said they found it near the *juego*. It is nicely polished and fairly

¹ Fewkes, *Twenty-fifth Annual Report Bureau of American Ethnology*, p. 84.

symmetrical. It is 5.5 cm. in diameter and is according to Mr. Gratacap a limonitic clay pebble.

Several feet east of the *juego* lay a few tremendous boulders, which had obviously fallen down the steep mountain-side. At the base of these rocks a number of sherds were found. They were of the same type as those from the *juego* itself. Some of them were ornamented.

Dr. Fewkes speaks of burial mounds near the *juegos* examined by him. He writes:

Just outside the boundary wall of every one of the inclosures studied by the author there were found one or more low mounds which bear superficial evidences of having been made by human hands.¹

He found that these mounds were used for burials. This leads him to an interpretation of the *juegos*. He writes:

The conclusions drawn from my excavations of the Utuado mounds are that large numbers of the dead were buried just outside the dance courts and that the elaborate *areitos*, or mortuary dances, were held in the latter.²

Attention must be called to the fact that no traces of such mounds were found near the *juego* excavated by the present author.

CUEVA DE LA SEIBA

The limestone mountains of the interior of Porto Rico are literally honeycombed with caves of all sizes.³ About one mile west of the *juego* which has just been described a cave was excavated. It is known locally as the *Cueva de la Seiba*. It is situated on the land of the *Hacienda Jobo* at the head of a little valley that runs from north to south. The entrance to this cave is about sixty feet above the bottom of the valley. The slope on which it opens is quite abrupt. The general appearance of the cave was that characteristic of limestone caves in general. Stalactites and stalagmites formed chambers, niches, and partitions.

The entrance was not large. Its breadth was eleven feet, its height at present only about four feet. The latter measurement

¹ Fewkes, *ibid.*, p. 82.

² Fewkes, *ibid.*, p. 83.

³ Fewkes, *ibid.*, p. 87.

however must have formerly been greater. Several bowlders about three feet high now block the entrance. It is evident from the circumstances that they fell down from the outer edge of the

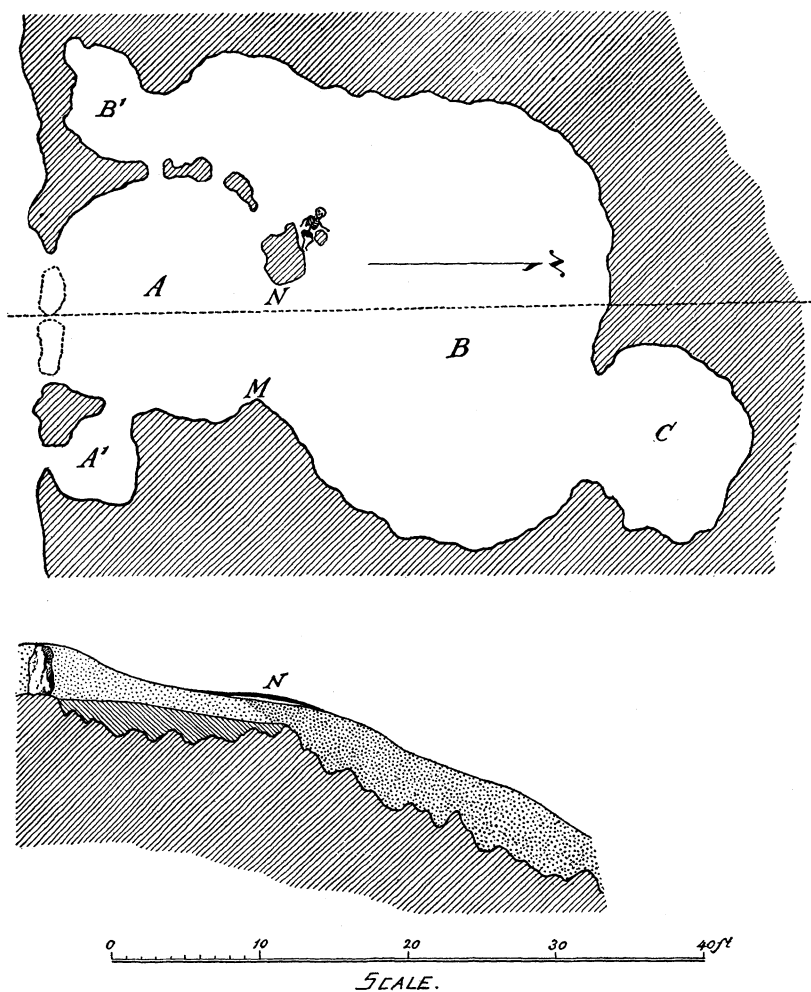


FIG. 13.—Cueva de la Seiba.

ceiling of the cave. The height of the entrance before these rocks became detached must have been about seven feet.

Figure 13 gives an idea in a schematic way of the general form of

the cave with its subdivisions. The shaded areas indicate the rock formations. The cave can be roughly divided into three main chambers. The first one from the entrance marked *A* was clearly defined from the rest of the cave by a series of stalactites. It was approximately circular with a diameter of about sixteen feet. The greatest height of this chamber from the floor to the ceiling was about eight or nine feet before the soil of the floor had been removed. The entrance to the cave was at the south side of this chamber. A small and very low chamber (*A'*) led off from *A* on its east side. Between points *M* and *N* was the passageway to the second and largest chamber. As is seen in the drawing, this chamber surrounded chamber *A* on two sides. It measured twenty-two and one-half feet in depth from the point *N* northward. The floor of this chamber sloped down considerably towards the rear as seen in the cross-section. At its northernmost point it was five and one-half feet deeper than the floor of *A*. Chamber *B* extended very far around chamber *A* to the south. At *B'* it terminated in what might be regarded as a distinct chamber of small size. Finally a chamber *C*, much smaller than *B*, led off from the latter on the north. Its measurements were $9\frac{1}{2}$ by $12\frac{1}{2}$ feet. Its floor was about four feet deeper than the deepest point of chamber *B*.

The *Cueva de la Seiba* was very favorable for archaeological work, because it showed no traces of former digging. On the very densely populated island of Porto Rico few caves have escaped the hand of the random digger. The layers of this cave showed no indications of having been disturbed.

The first obvious traces of human activity consisted in a number of faces carved on the ends of stalactites. All of these rock carvings were on the northern and northwestern sides of chamber *A* and faced the entrance of the cave. Two of the faces were well preserved and casts were made of them. See figures 14 and 15. Traces of two or three other faces were discernible, but the constant action of the water was quickly making them disappear. It is surprising that the rock carvings survived as long as they did. It is impossible to say how many faces were originally carved on the stalactites of the cave.

Chamber *A* was the first to be excavated. In it two layers could be distinguished (see profile of fig. 13). The upper layer consisted of dark soil about one foot in depth at the center of the chamber. Under it was a homogeneous layer of light soil which extended down to the limestone formations of the floor of the cave. It covered all the irregularities of this floor. This light layer contained nothing that might be interpreted as the trace of human remains.

The general appearance of its soil (25.0-1533) was light yellowish and granular. It was nowhere decolored. Mineralogically it con-



FIG. 14.—Stone carving 18.5 cm. high.
(25.0-1563.)

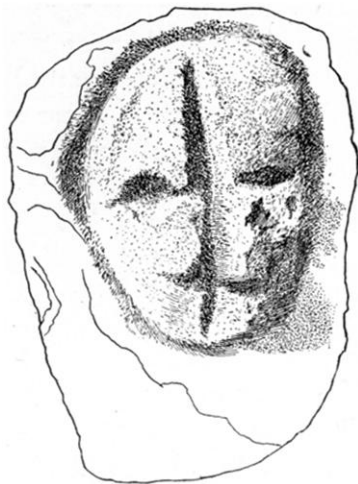


FIG. 15.—Stone carving 19.5 cm. high.
(25.0-1564.)

sisted of lime powder more or less stained with limonite (95 per cent.) and of siliceous spicules (5 per cent.). By origin it was disintegrated, Oligocene limestone. Of organic substance it contained some very small roots.

In the center of the chamber this lower layer was about one and one-half feet deep. On the eastern side of chamber *A* the yellow layer was much higher than in the center and here the dark layer over it was very thin. At the narrow passageway to the small side-chamber *A'* the lime dripping down from the ceiling had formed a plate immediately over the yellow layer. This plate was removed.

About five inches below the surface of the yellow layer two marine shells were found at this point. In the little chamber *A'* the dark layer was missing altogether. Only the yellow soil was present. Nothing was found here excepting a tertiary sea-urchin.

The surface of the dark layer of chamber *A* sloped upwards towards the entrance of the cave and there covered the boulders mentioned above. See profile of figure 13. A number of potsherds and shells of crabs were found in the dark layer of this chamber.

The soil of this upper layer (25.0-1532) was brownish gray, earthy, and somewhat granular in appearance. It was a mixture of weathered limestone, ashes, and calcined crab remains. It consisted of the following minerals: lime powder (80 per cent.), calcite crystals (10 per cent.), diatom spicules (?) (1 per cent.), fragments of charcoal (5 per cent.).

In the western corner of chamber *A* the prevailing dark soil was replaced by some soil of somewhat different texture and of considerably lighter color. It was light gray, earthy, lumpy in appearance. It consisted of lime powder (70 per cent.), lime powder stained with limonite (9 per cent.), crystals of calcite (10 per cent.), and fragments of charcoal (10 per cent.). Of organic matter chela and carapace of crab were conspicuous features.

In this soil was found a gray stone about 10 cm. long (25.0-1540). It is broken. Two of its surfaces are quite smooth and appear to be polished artificially. It is an andesyte according to Mr. Gratacap.

The floor of chamber *A* was more or less horizontal, but the surface of the soil in chamber *B* sloped down considerably. As is seen in the sketch, this slope began between the two points marked *M* and *N*. While two distinct layers were discernible in chamber *A*, there was only one such layer in chamber *B*. The texture of this layer was similar to that of the dark layer of chamber *A*. In general appearance it was, however, finer and much less brownish in color and more decidedly gray. The difference in color is indicated in the sketch by difference in shading. The transition from the top layer of *A* to the layer of *B* was more or less gradual. Near point *N* the layer consisted of lime powder (85 per cent.), calcite crystals (5 per cent.), and charcoal fragments (10 per cent.).

See sample 25.0-1530. In the rear of chamber *B* the percentage of charcoal increased, the comparison here being as follows: lime powder 85 per cent., fragments of charcoal 14 per cent., grains of quartz 1 per cent. See sample 25.0-1541. Special features of the soil of chamber *B* were gastropod fragments, mouth piece, chela, and carapace of crab.

Between the points *M* and *N* the gray layer was ten to twelve inches in depth. As is indicated in the cross-section near point *N* a more complicated stratification was observed. Over the thick gray layer two very thin layers could be distinguished. The upper one was only one-half inch thick and consisted of black earth; under it was another thin layer, about one inch in thickness and of different texture.

To summarize the results of the analysis of the soils from different parts of the cave, the important data are that the chief constituent of all the samples is disintegrated, Oligocene limestone and that all the soil of the cave excepting that of the lower layer of chamber *A* contains a high percentage of charcoal fragments and of crustacean remains. Evidently the lower layer of *A* alone antedates human activity in the cave. This is corroborated by the fact that none of the artifacts were found in this layer.

Numerous pieces of tuffs and andesites (25.0-1562) were found in the gray soil near the entrance to chamber *B* and farther back in this chamber. These stones are not indigenous to a limestone cave and therefore must have been brought in from the outside. They do not show traces of having been worked with the exception of one tuff which may be artificially polished.

Besides the small fragments of organic matter already mentioned in the analyses of the soils from the cave, the gray soil of chamber *B* abounded in enormous quantities of shells of snails, shells of crabs, bones of a rodent, and also some bird bones. The rodent bones proved to be of considerable zoological interest, inasmuch as they belong to a new genus and species. Dr. J. A. Allen of the American Museum of Natural History has published a description of them in the *Annals of the New York Academy of Sciences*.¹ He

¹ *Annals of the New York Academy of Sciences*, vol. XXVII, pp. 17-22.

has given to this rodent the name: *Isolobodon portoricensis*. It is a large rodent allied to *Plagiodontia*.¹ Of the condition of the bones Dr. Allen writes:

They are highly coated with a gray ashy covering, easily removed with a soft brush, and have the appearance and general character of recent bones, having undergone no mineralization nor much discoloration.²

And finally in the conclusion he makes the following interesting remarks:

Isolobodon, like *Plagiodontia*, is evidently of recent extinction. In the case of *Plagiodontia*, the only extant specimen, so far as known to me, is the type of the species in the Paris Museum of Natural History, described by F. Cuvier in 1836. . . . It is mentioned as being nocturnal and frugivorous, its flesh as very good to eat, and that for this reason "les Haitiens, qui en sont très friands, les

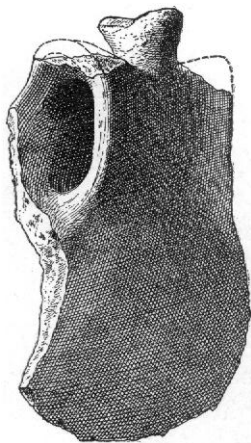


FIG. 16.—Potsherd. (25.0-1561.)

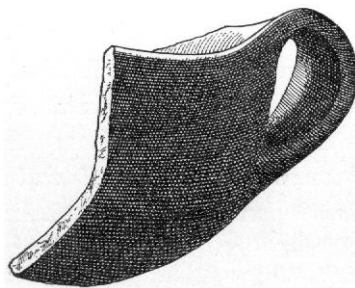


FIG. 17.—Potsherd. (25.0-1542.)

recherchent si soigneusement, qu'ils ont fini par rendre ces animaux très rare." In all probability it was soon after completely exterminated. It is also probable that *Isolobodon* had already become extinct in the neighboring island of Porto Rico, doubtless from a similar cause, and perhaps not long prior to the discovery of the island by Europeans. At least the fresh condition of its remains found in Seiba Cave seems to imply recent extinction.

Considering the nature of the soil in which these bones were found, the great quantities in which they occurred, and the nature

¹ *Ibid.*, p. 17.

² *Ibid.*, p. 18.

of the organic matter with which they were mixed, there can be little doubt that the rodent was actually used by the natives as food. Bird bones were found in the same stratum. They belong, according to Mr. W. De W. Miller of the American Museum, to a pigeon and a parrot. The shell-animals that were deposited in great quantities in the cave have been kindly identified by Mr. Miner of the American Museum. The following species were represented:

Megalomastoma Croceum Gmelin (= *M. cylindraceum* Chemn.)

Helix (Parthena) angulata Fer.

Helix (Caracolus) Carocolla Linn.

Helix (Thelidomus) lima Fer.

Cistula rusei Pfr.

Subulina octona Brug.

In the soil of chamber *B* a large number of potsherds were found. A few also lay in the top layer of chamber *A*. Many of these sherds are large and show the shape of the original pot fairly well. Figures 16 and 17 show two large sherds. In the same way as all the sherds found in the *juego* represent one type of pottery, so do those from the cave also belong to one and the same type. But it is interesting that these two types are different. The pottery from the cave is much heavier and also darker in color. The differences in color and chemical composition are not due to secondary effects of the different soils in which the two kinds of pottery lay imbedded, but are inherent. Dr. Berkey kindly made photomicrographs of the two types, figures 18 and 19 (magnification about 30 diameters). These figures show the difference in texture very plainly. Dr. Berkey supplied the following information.

The pottery from the cave (fig. 18) shows a coarser grain than the other, a greater variety of size of grain, a greater variety of composition of grain, a larger amount of dark material, a larger amount of clay filling or binding, and a more pronounced flowage structure, a structure that must have been developed in the modeling of the product.

Concerning the pottery from the *juego* Dr. Berkey says:

The microscope shows a very great abundance of fragments of comparatively clear mineral matters constituting the bulk of the material. They are bound together by a clayey product (or what was once clay) and this matter seems to be

present in not much greater amount than must have been necessary to hold the multitude of fragments together. The structure is essentially massive. Hardly anywhere is there any flowage effect. The general makeup seems to indicate that considerable care was taken to select comparatively pure, angular sand as one of the constituents; and a comparatively pure, fine clay as the other. The excellent mixing of the two things, and the selection of material indicated would seem to me to indicate a higher type of workmanship and appreciation of differences in material than is indicated in the first type.

In contradistinction to the pottery of the *juego* that of the cave is almost altogether devoid of ornamentation. Incised lines which are

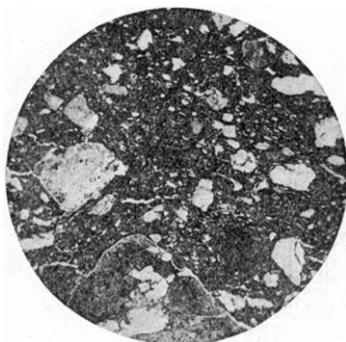


FIG. 18.—Photomicrograph of pottery from the cave.

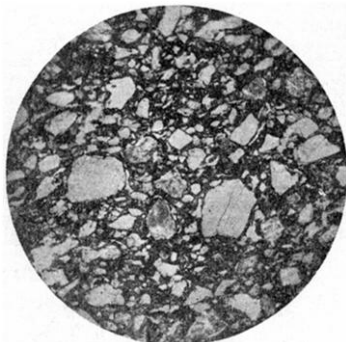


FIG. 19.—Photomicrograph of pottery from the *juego*.

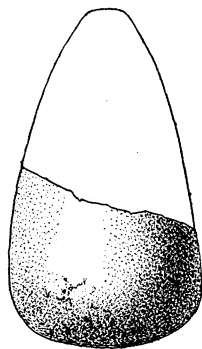
so prominent a feature of the former are missing almost completely on the sherds from the cave. Only a very few sherds show simple straight incised lines. The typical scroll-work of the other type of pottery is absent entirely. These differences in the two types cannot be accidental on account of the large number of sherds found. Very wide handles are a prominent trait of the pottery from the cave (see figs. 16 and 17). The existence of two distinct types of pottery in Porto Rico is interesting and deserves further study. Fewkes seems to be under the impression that there is only one type.¹

On the sherd of figure 16 there is a knob between the two shoulders of a large handle. It is made by the technique of modelling. The sherd of figure 35 shows a similar feature, however; with the

¹ Fewkes, "The Aborigines of Porto Rico and Neighboring Islands," *Twenty-fifth Annual Report, Bureau of American Ethnology*, p. 180.

difference that the knob and the two shoulders are elaborated into crude faces.

In the ashy material of chamber *B* a shell of a turtle was found, likewise a fragment of a light green polished celt (fig. 20). It is made of amphibolite. Dr. Berkey informed me that this is a rare stone in Porto Rico and that he never saw an amphibolite from this island with such a fine structure. Another unworked piece of amphibolite was found in the cave (25.0-1562). In the ashes of chamber *B* there was also a small polished pebble (25.0-1546). It is 3 cm. long and is an andesite-porphyr. In the small side chamber *B'* a number of rodent bones were dug up.



Most of the deposits in chamber *B* were found near the sides adjoining chamber *A*. In the deepest and most northern part of the chamber only several sherds and the two round stones mentioned below were found.

FIG. 20.—Light green polished celt. Natural size. (25.0-1534.)

Finally in the last chamber, *C*, were unearthed a number of potsherds and a heap of snail shells. The sherds are of the same type as those from the other chambers. Two of them have simple parallel incised lines near the rim of the pot. In this chamber was also found a dark green and very hard stone (25.0-1544). It fits comfortably into the hand. The two broad surfaces of this stone show a marked polish. Mr. Gratacap believes that this is doubtlessly artificial. It would seem that this stone was used for the purpose of rubbing. It is an aphanitic trap and must have been brought into the limestone cave.

From the side of the small and dark chamber, *C*, a narrow passageway, difficult of access, led around chamber *B* on the east towards *A'*. This passageway was entered, but in it no traces of archaeological remains were discovered.

In the ashes of chamber *B* two round pebbles, 7 and 7.5 cm. in diameter respectively, were found (25.0-1561). A similar stone lay in chamber *C* (25.0-1544). The surfaces of these three stones

are quite smooth. Probably they were used for rubbing or for cooking purposes. The smoothness is apparently not natural. All three stones are serpentinized diorites according to Mr. Gratacap.

An interesting find was made in a small niche of the ceiling of the cave near the point *M*. This niche was formed by the grotesque shapes of the limestone. Here we found the pretty pendant of



FIG. 21.—Bone pendant.



FIG. 22.—Facial carving in stone. 9.5 cm. x 11.3 cm. (25.0-1550.)

figure 21. It is 5.2 cm. in height. A portion of the one side is broken off. It is made of bone and the lines are scratched in.

Immediately north of chamber *A* the skeleton of a very small baby was imbedded in the ashy soil. It lay between two limestone columns as shown in figure 5 with its head towards the west. The bones are well preserved, especially the skull.

As has been stated above, the soil of chambers *A* and *B* contained a good deal of charcoal. This led us to make a special effort to ascertain whether or not traces of a fireplace were present. Investigations showed that this was decidedly not the case.

MISCELLANEOUS SPECIMENS FROM THE SAME REGION

Near the house of Mr. Frederico Schellhorn, the manager of the *Hacienda Jobo*, and about a half a mile south from the site of the

juego described above there had previously been the traces of another *juego*. These were still plainly visible several years ago, as

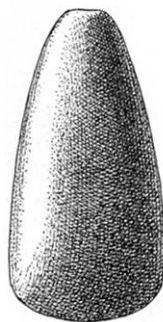
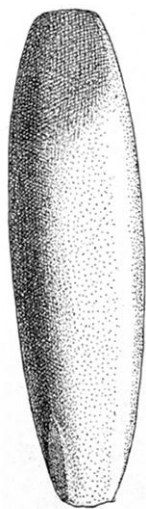


FIG. 23.—Celt of green stone 9.8 cm. long. (25.0-1555.)

FIG. 24.—Celt of green stone 6.1 cm. long. (25.0-1556.)

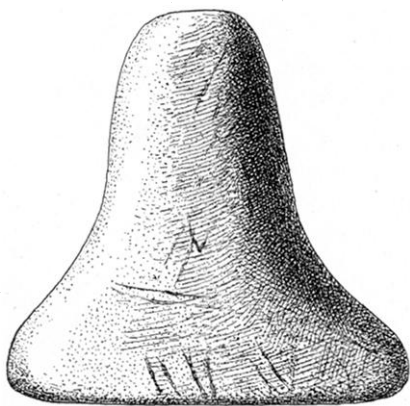


FIG. 25.—Stone implement 7.8 cm. long. (25.0-1551.)

FIG. 26.—Stone fragment natural size. (25.0-1553.)

Mr. Schellhorn informed me. But now the ground is under cultivation and the encircling stones have been removed. Several

objects were brought to me which the peasants had found on this site while cultivating the land. The most interesting specimen obtained in this way was the flat stone with facial carving shown in figure 22. Similar objects are illustrated on Plate LV of Fewkes'



FIG. 27.—Pottery bowl 9 cm. high. (25.0-1567.)



FIG. 28.—Pottery bowl 9.5 cm. high. (25.0-1537.)

monograph. The size of the above specimen is approximately the same as those shown by Fewkes. The two small green celts of figures 23 and 24 were found on the same site. They are andesitic tuffs according to Mr. Gratacap. The grayish-brown stone of

figure 25 is also from this site. It is flat and its base is of long oval shape. This base is quite smooth and suggests that the specimen may have been an implement for pounding or rubbing. Finally the red stone of figure 26 was found on this destroyed *juego*. It is a red diorite, of regular cylindrical shape, and broken off at the one end. Probably it was a pestle of the type shown by Fewkes on Plates xxv-xxvii.

The pot in figure 28 was found and bought on the *Hacienda Jobo*. As I was told, it had been imbedded under guano in a cave on the right bank of the *Quebrada de Jobo*. Its shape and ornamentation is interesting. I would like to call especial attention to

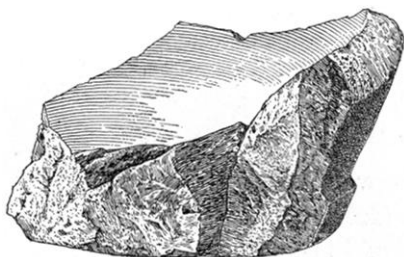


FIG. 29.—Fragment of mortar made of burnt clay, 20.5 cm. wide. (25.0-1426.)



FIG. 30.—Triangular stone, 10.2 cm. high. (25.0-1480.)

the rim around the bottom which is visible on the photograph. This rim serves as a foot on which the pot stands firmly.

APPENDIX

In the following I would like to enumerate and describe briefly a number of specimens which were purchased in Porto Rico by Dr. Alden Mason and Prof. Franz Boas. These objects are also in the American Museum of Natural History.

25.0-1567 (fig. 27). This is another intact bowl. It is 9 cm. in height and represents a type of red ware. It does not have a foot at its bottom as the pot of figure 28 does. Around the rim there is a band of simple incised work. The two handles are modelled into faces of a characteristically Porto Rican type.

25.0-1426 (fig. 29). A fragment of a mortar made of burnt clay. The inside is smooth and well rounded. As shown on the drawing a raised band ran around the base of the mortar.



FIG. 31.—Triangular stone seen from above, 22 cm. long. (25.0-1467.)

25.0-1480 (fig. 30). One of the many triangular stones of the type so often reported from Porto Rico. Their use is enigmatical. The present specimen is quite plain in workmanship. It is a volcanic basalt. It is marked as having been found on the ball-court in Bayane.

25.0-1467. Another triangular stone. Figure 31 shows it from above. When seen from the side, the face is built up triangularly. The workmanship is excellent. Its surface is well smoothed. Presumably the stone is a fossil coral.

25.0-1477 (fig. 32). A small stone figure apparently representing an animal lying on its belly, but with its head twisted upward. The features of the face are marked by grooves. On the side



FIG. 32.—Stone figure representing an animal, 5.6 cm. high. (25.0-1477.)



FIG. 33.—Stone figurine, 6.7 cm. high. (25.0-1529.)

opposite the face each foreleg is pierced through by a hole (not visible on drawing). These borings were evidently used for suspending the stone as a pendant of some kind.

25.0-1529 (fig. 33). A small figure of a being standing with bent knees or sitting on its haunches. The technique by which it is worked is interesting. The forms of the face and of the legs are shaped by means of long straight grooves. These must have been made by means of a filing-process.

The specimens of figures 32 and 33 are both made of white stone of essentially the same nature. Dr. Berkey defined this material as follows: "A metamorphic silicate rock made up chiefly of diopside and amphibole." It is of very fine grain. This material is native to Porto Rico in contact zones.

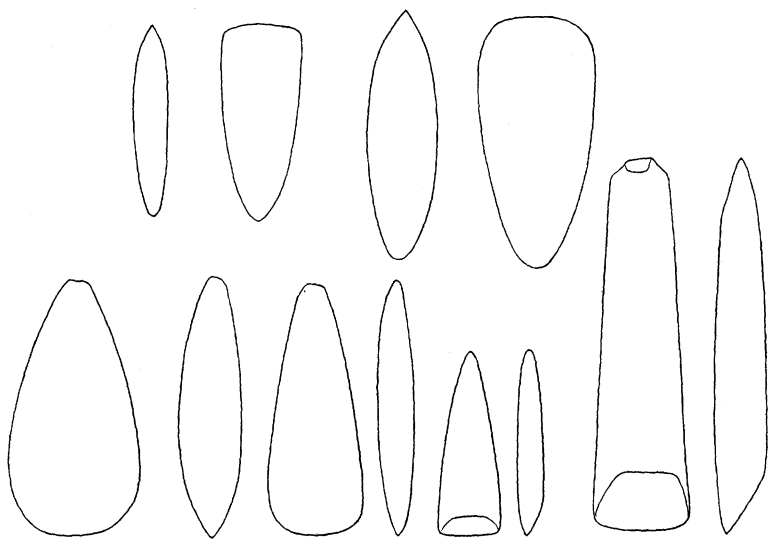


FIG. 34.—Outlines of celts. (Upper row, 25.0-1485, 25.0-1455. Lower row, 25.0-1454, 25.0-1456, 25.0-1464, 25.0-1463.)

Figure 34 shows the shapes and sizes of six different celts. These are fairly typical of the forms of all celts in the collection. Dr. Berkey determined their mineralogical origins as follows:

25.0-1454. Probably an indurated ash.

25.0-1455. A fine-grained andesite.

- 25.0-1456. An indurated volcanic ash.
25.0-1463. Probably an ash.
25.0-1464. A contact rock, metamorphosed limestone.
25.0-1485. An andesite, finely porphyritic with some flowage.

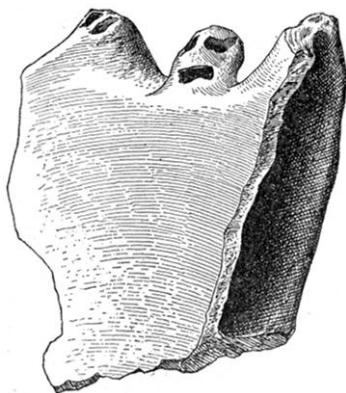


FIG. 35.—Potsherd, 12 cm. high. (25.0-1499.)

25.0-1499 (fig. 35). A potsherd with a broad handle of the same type as the handle of the sherd on figure 16. The specimen has already been referred to on page 228.

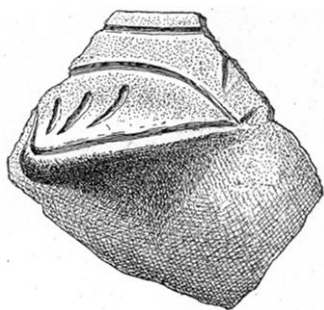


FIG. 36.—Potsherd with projecting handle, 6.2 cm. high. (25.0-1511.)



FIG. 37.—Potsherd with incised spiral, 7.8 cm. wide. (25.0-1423.)

25.0-1511 (fig. 36). A potsherd with a projecting handle which is ornamented by incised lines.

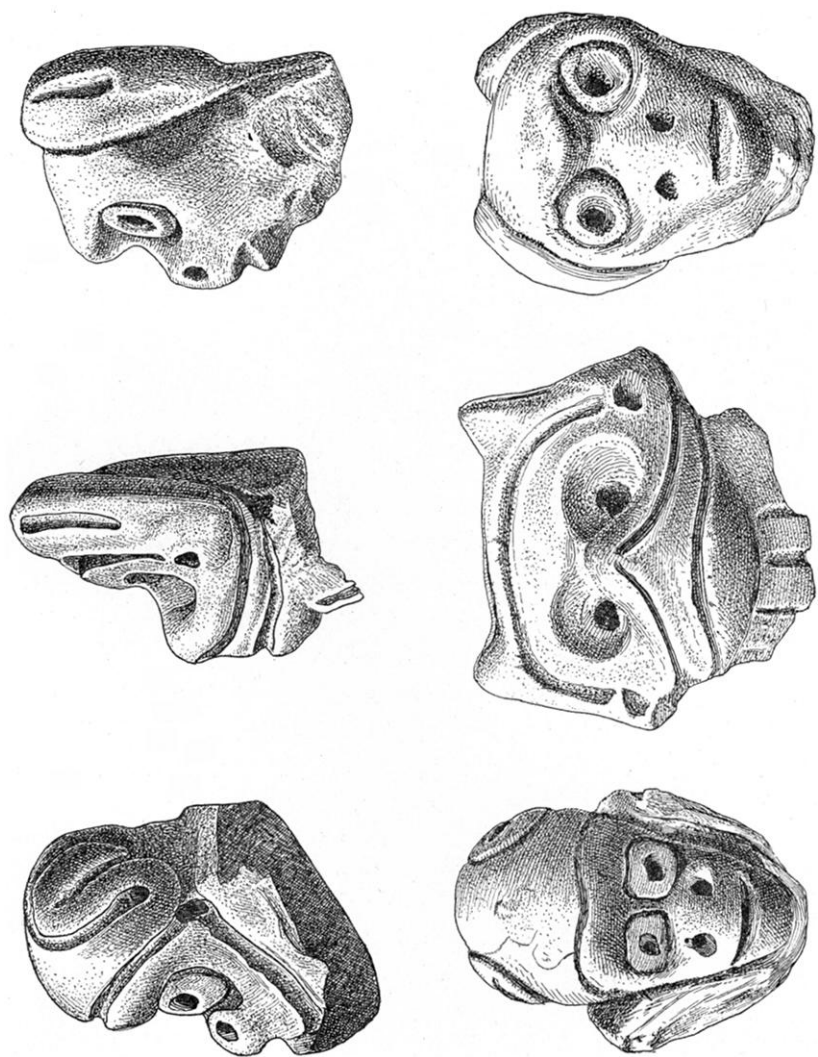


FIG. 38—Three faces of burnt clay, front and side view. A, 5 cm. high; B, 4.5 cm. high; C, 4 cm. high. (25.0-1420.)

25.0-1423 (fig. 37). A potsherd with an incised spiral and an elevated knob of clay. This knob has transversal grooves.

25.0-1420, 25.0-1510 (figs. 38 and 39). Four faces of burnt clay. They are fairly representative of the large number of such faces purchased. Three of them are shown *en face* as well as in profile. Such faces are very well known from Porto Rico as well as from many other West Indian islands. They are broken off from pots to which they were originally attached, see figure 27. The technique of modelling these faces is very characteristic of West Indian art. The features are worked out by means of incised lines and holes. The eyes are typical. They are ordinarily made of a hole with a concentric line.



FIG. 39.—Face of burnt clay, 4.7 cm. wide. (25.0-1510.)

The prognathous jaws make the faces look like those of monkeys. This is a frequent feature. 25.0-1510 (fig. 39) is different in many respects from the other faces. It is beautifully made and shows remarkable realism in its details.

Archaeological Note.—Finally I would like to call attention to the following remark, for which I am indebted to the geological department of Columbia University, and which may interest some other archaeologist working in Porto Rico. In the valley of Jueyes river back of the Coamo limestone ridge there are Indian shell heaps intermixed with much pottery. In a cave of the ridge there are rock carvings. Natives living near this site stated that nobody had as yet visited this spot for archaeological work.

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